University of Strathclyde Business School

Fraser of Allander Institute

The Direct Long-term Trade Impacts of EU Exit Scenarios on Northern Ireland

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Table of contents

The Fraser of Allander Institute

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The report was commissioned by the Department for the Economy in Northern Ireland.

The analysis and writing-up of the results was undertaken independently by the FAI. The FAI is committed to informing and encouraging public debate through the provision of the highest quality analytical advice and analysis. We are therefore happy to respond to requests for factual advice and analysis. Any technical errors or omissions are those of the FAI.

Executive summary

The Direct Long-term Trade Impacts of EU Exit Scenarios on Northern Ireland

- This report focusses on the long-term economic impact of Brexit, as well as the potential implications of the UK Government's Withdrawal Agreement, and specifically the so called "Backstop" on Northern Ireland's economy. The analysis is undertaken using a multi-sectoral dynamic macroeconomic model of Northern Ireland (NI). The model captures the domestic economy and key trade relationships between NI, the rest of the UK and the rest of the World (including the EU), and allows the analysis of a range of scenarios relative to a counterfactual position.
- We find that, based upon the assumptions and methodologies set out in this report, all Brexit options will negatively impact the NI economy with simulated reductions in Gross Domestic Product (GDP) ranging from 3.3% (hard Brexit) to 1.1% (soft Brexit). The scenarios examined that involve NI trade taking place within the context of the "Backstop" demonstrate simulated reductions in GDP ranging from 2.7% to 1.3%.
- These impacts are significantly smaller than those presented by the UK Government as part of its long term analysis published in November 2018. This research indicated that under a "no deal" scenario, the Northern Ireland economy could see a potential long term reduction in GVA of approximately 9%. Differences are partly driven by the fact that this report analyses the economic impact of Brexit in Northern Ireland using a single region model that considers the regional economy in isolation and only focuses on the impact of changes in trade.
- Results demonstrate the impact on the Northern Ireland economy of direct trade impacts only, and do not capture the economic consequences of Brexit on the UK economy as a whole. Therefore the potential knock-on effects of reduced economic activity in GB for the Northern Ireland economy are not captured. To provide a flavour of such effects we test the sensitivity of our results under the hard Brexit scenario to a potential 5% and 10% reduction in sales to GB[1]. This results in an overall reduction in GDP for a hard Brexit scenario of 4.0% and 4.6% respectively.
- Perhaps the more interesting finding – and what this analysis is designed to shed light upon – is the differences in the potential sectoral impacts of the various scenarios.
- The most affected industries across all the scenarios are the food and drink and agricultural sectors. There are also significant impacts for the manufacturing, financial services and wholesale and retail sectors. The impact on food and drink is significantly larger under the hard Brexit scenario due to the presence of both tariffs and non-tariff barriers. In the backstop scenarios, wholesale and retail is affected due to the presence of frictions in trade between GB and NI. The scenario where the backstop endures in part to NI and GB separately signs free trade agreement represents the most negative scenario after a hard Brexit.

1 Whilst this is not equivalent to a full inter-regional analysis, it does provide a useful illustration of the impact of a wider 'domestic' shock on the NI economy.

Introduction

Section 1

The Fraser of Allander Institute (FAI) was commissioned by the Department for the Economy (DfE) of the NI Civil Service to model the possible long-term economic impacts of a range of Brexit scenarios for Northern Ireland (NI).

Since the 2016 EU Referendum, there has been an explosion of studies looking at the impact of Brexit (see for instance Ciuriak et al., 2017, Ebell and Warren, 2016, Hantzsche et al. 2018, HM Treasury 2016, HMG 2018, Roy et al., 2016).[1] In the main, these studies have tended to focus upon the possible impacts of Brexit for the UK economy as a whole. The regional studies that do exist have typically apportioned national results to sub-regions of the UK based upon employment and sector shares. The main exception to this has been the work of the Scottish Government and the FAI (see for instance The Scottish Government, 2019 and Roy et al., 2016)[2].

This study focusses on the impact of Brexit and potential future trade relationship with the EU on NI in isolation. It assesses the impacts on NI of dislocations to its trade with the EU and/or GB in the event of different Brexit scenarios.

This has two key implications. Firstly, potential spillover from the rest of the UK (and from the rest of the World) to NI are not taken into account. If Brexit leads to a slowdown in the rest of the UK, this will have its own knock-on effects on the NI economy. To provide a flavour of such effects we test the sensitivity of our results to a potential 5% and 10% reduction in sales to GB (see section 5.1.2).

Secondly, since the primary focus of this study is the impact of Brexit on trade, we do not look at other sources of economic impact such as changes in migration regulations, exchange rates, impacts on labour productivity, foreign direct investment, business confidence or uncertainty.

Crucially, the economic impact of the various scenarios is estimated by comparing the economy before and after the economic shock with everything else (including all policy decisions) being held constant. That is, we do not, for example, model the potential impact of future trade deals that the UK may sign with other '3rd countries' or assess the potential loss of existing partnerships with countries which have currently signed trade deals with the EU.

The analysis therefore, should not be considered a forecast and simply represents a simulation based on a very specific set of assumptions relating to various Brexit scenarios.

The reminder of the report is organised as follows. Section 2 provides a simple description of the macroeconomic model used for this analysis. Section 3 summarises the key channels through which Brexit may have an impact on the Northern Ireland economy. Section 4 sets out a range of scenarios concerning the trading relationships that could hold when the exit from the EU is completed. Sections 5 presents the key results. Section 6 concludes.

2 Much of this work draws on the Scottish Government's Computable General Equilibrium model which is based upon an original specification developed by the Fraser of Allander Institute.

Modelling framework

Section 2

To undertake this analysis, we make use of a Computable General Equilibrium (CGE) framework called NI-CGE. This is a type of simulation model widely used by governments and organisations across the world such as HMRC, the Scottish Government and the World Trade Organisation to look at a variety of policy issues including the impact of changes in trade agreements. A similar modelling approach was undertaken to assess the potential impacts on the Scottish economy for the cross-party Scottish Parliament Culture, Tourism, Europe and External Affairs Committee[3].

The NI-CGE model provides detailed representation of the Northern Ireland economy and captures the interlinkages between the private sector, government and households.

The model combines economic data provided by the Northern Ireland Statistics and Research Agency (NISRA) with a complex system of equations to give an accurate representation of the structure of the economy. Economic relationships in the model are based on theory and empirical evidence. This provides a framework to model the impact of policy changes on key economic variables.

NI-CGE is a multi-sectoral, dynamic CGE model with an imperfectly competitive labour market. It can simulate changes to Northern Ireland policy and capture how this will impact NI, the rest of the UK and the rest of the World including the EU. As it is a single region model, it cannot however assess the potential impacts on the NI economy from policy changes in the rest of the UK. The model generates estimates of the impact of any economic shocks on aggregate and sectoral level of gross output, GDP, employment, unemployment, capital stock and real wages.

The technical details of the model are set out in Lecca et al. (2013, 2014).

Whilst this modelling framework is similar to that used as part of the HMG analysis[4], it is more limited in its scope as it does not seek to capture second order effects arising from lower economic growth within the UK, EU and rest of the world, as well as potential changes to migration and fiscal policy resulting from Brexit. Nevertheless, it does provide a robust framework from which to assess the direct consequence of changes to trade policy with the EU arising from Brexit.

3 See www.parliament.scot/General%20Documents/Fraser_of_Allander_-_Brexit.pdf

4 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/760484/28_November_EU_Exit_-_Long-term_economic_analysis_1_.pdf

Assessing the impact of Brexit on the Northern Ireland economy

Section 3

To date, there is still uncertainty regarding the future trade relations between Northern Ireland and the EU. However, there is agreement that the economic impact of changes in trade for goods will mostly come through two main channels: tariff barriers and non-tariff barriers.

Tariff barriers are set internationally to restrict the flow of goods. If there is no trade deal between the UK and the EU, trade between the EU and Northern Ireland will be subject to Most Favoured Nation (MFN) tariffs, which implies that the same tariff is applied to all the trading partners.

Non-tariff barriers (NTB) include the more indirect rules and regulations that can create barriers on trade. Non-Tariff barriers are typically driven by custom costs, rules of origin, differences in regulatory requirements to enter a market, restricted movement of people and other regulations.

The combination of tariff and non-tariff barriers depends on the specific nature of the future relationship between the EU and the UK. While tariffs are likely to feature more prominently in the case of no-deal, non-tariff barriers will result from any Brexit agreement in different magnitudes. For this reason, we explore a range of possibilities.

In addition, a study completed by the Department for the Economy[5] has been used to inform analysis relating to the potential impact of Brexit on the services sector. This study found that the Northern Ireland services sector would be affected in all Brexit scenarios and the ad valorem equivalent figures derived within that study have been used as a modelling input for this report.

It needs to be noted that Brexit is a national policy and therefore, in addition to direct impacts, it will have impacts on the rest of the UK which will spillover to NI. However, as the model is a single region model, these, as well as other EU and potential global impacts resulting from Brexit, will not be captured. To illustrate the spillover impact from GB to NI, we test the sensitivity of our results to a potential 5% and 10% reduction in sales to GB.

5 https://www.economy-ni.gov.uk/publications/eu-exit-and-impacts-northern-irelands-services-trade

Scenarios

Section 4

Given that an agreement between the EU and the UK on future trade relationship has not been reached, a range of possible scenarios are explored. In undertaking such modelling, we have had to make a number of assumptions on what the various scenarios comprise. This stems, in part, from the lack of clarity over the detail of each option so far and the necessity of providing a transparent high-level overview of often complex legal agreements for the purposes of a computational modelling framework.

We explore three high level scenarios. For illustrative purposes we term them: hard Brexit, indefinite backstop, NI Backstop GB FTA/EEA and soft Brexit.

Table 1: Brexit Scenarios

Hard Brexit	All of UK including NI would trade with EU on WTO Terms using EUs MFN tariff schedule. We also include a sensitivity whereby NI imports would be subject to the UK's recently published "no deal" tariff schedule[6].
Indefinite Backstop	Only NI follows single market rules, however both NI and GB share same customs territory.
NI (Backstop), GB (EEA)	Assumes no technological or facilitative solution to the border and that the backstop endures indefinitely (in part) to NI, with the GB future partnership with EU based on an EEA agreement e.g. Norway or FTA e.g. CETA
NI (Backstop), GB (FTA)	
UK (incl. NI) in EEA Agreement	This option would be equivalent to having a soft Brexit with customs checks taking place on the NI/ROI border

Source: *NI Department for Economy*

I. Hard Brexit (WTO)

We take this as the default Brexit scenario and would apply if other deals cannot be secured.

In this scenario, NI (and the rest of the UK) trades with the EU under WTO rules, including tariffs. This scenario uses the EU's published MFN tariff schedule as the basis for future trade, however a variation is included to take account of the UK Government's recently published tariff schedule[7]. Note that this does not include the zero tariff policy across the ROI/NI border which is thought to be temporary and therefore inappropriate for a long-term analysis. In summary, this scenario implies that trade between Northern Ireland and the EU will be characterised by:

- The presence of MFN tariffs;
- No obligation to apply EU laws, although traded goods would still have to meet EU standards;
- Restriction in trade of services with the EU.

6 https://www.gov.uk/government/news/temporary-tariff-regime-for-no-deal-brexit-published

7 It is recognized that the UK tariff schedule is temporary. However it has been assumed that this applies into the long term for the purposes of this analysis.

Tariff revenues typically accrue to the central government. However, it could be argued that the revenue from tariffs imposed on EU imports will be redistributed at a regional level. To reflect this we assume that a) NI receives a share of tariff revenues equivalent to that generated by the NI trade flows, b) this is spent by the NI devolved government and is additional to the pre-Brexit spending level[8]. The amount is added to the pre-Brexit NI government spend and distributed across sectors according to the baseline proportions.

II. Backstop

The second scenario is the so-called 'backstop' in place for NI. Within the backstop we also explore scenarios where there is no solution found to the issue of the land border on the island of Ireland and NI and GB have different future trading agreements with the EU. Specifically, we analyse the case where NI follows EU rules (customs & single market) while GB is either part of the European Economic Area (EEA) or has a Canada style Free Trade Agreement (FTA) with the EU.

The three different sub-scenarios are summarised below:

1. Indefinite backstop:

- NI follows single market rules ;
- NI and GB & EU share a common customs market for goods;
- Trade frictions between GB-NI due to differences in regulations;
- Restriction in trade of services with the EU.

2. NI Backstop, GB EEA;

- NI follows single market rules;
- GB is part of the European Economic Area (EEA);
- Customs checks apply in goods trade between GB and NI;
- Restriction in trade services with the EU.

3. NI Backstop, GB FTA;

- NI follows single market rules;
- GB follows a Free Trade Agreement (FTA) with the EU;
- More restrictive trade frictions between GB-NI (customs and single market);
- Restriction in trade services with the EU.

8 Local government expenditure is fixed by default in all simulations. This is to reflect the fact that public expenditure is set at the central government level which is exogenous in this model. This assumption can be varied to reflect situations where the regional government has devolved fiscal powers such as in the case of Scotland.

III. Soft Brexit (EEA)

Finally we model a scenario where the entire UK retains a close trading relationship with the EU. We call this a 'soft Brexit'. This scenario is summarised as follows:

- NI and GB are part of the EEA;
- Rules of origin apply;
- Trade of services is marginally impacted due to differences in regulations.

Each of these scenarios imply a different degree of integration with the EU. In addition, the backstop scenarios reflect situations where the degree of integration between NI and the EU, and GB and the EU varies. In this case, potential friction arises in trade between NI and GB.

Non-Tariff Barriers

We combine information from the Northern Ireland Statistics and Research Agency (NISRA) on trade between NI and the EU with non-tariff barrier estimates between the UK & EU from HMG (2018)[9]. A summary of non-tariff barriers applied in the study is provided in Table 2. Impacts on trade services are based on Services Trade Restrictiveness Indexes (STRI) specifically calculated for NI[10].

Table 2: Non-tariff barriers applied in each scenario

	NI- EU	GB-NI
Hard Brexit	10%	0%
Indefinite backstop	0%	3%
NI (Backstop), GB (EEA)	0%	5%
NI (Backstop), GB (FTA)	0%	8%
Soft Brexit (EEA)	5%	0%

Source: *DfE Analysis*

For the backstop scenarios, it is assumed that Northern Ireland essentially remains within the EU for goods trade i.e. both customs & single market. Consequently it is assumed that the HMG's analysis relating to potential NTBs between the UK and the EU would apply for trade between GB and Northern Ireland as represented by the above NTB estimates. The NTB of 3% relating to the indefinite backstop i.e. both NI and GB share the same customs territory, represents the additional cost for NI businesses of checks relating to the single market. Furthermore, it is assumed that there are no trade restrictions for NI companies selling into GB, as per current UK government policy.

9 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/760484/28_November_EU_Exit_-_Long-term_economic_analysis_1_.pdf

10 https://www.economy-ni.gov.uk/publications/eu-exit-and-impacts-northern-irelands-services-trade

Results

Section 5

The main results from the analysis can be summarised In Table 3 below.

Table 3: Main Results

	GDP	Exports	Real Wage	Employment	Investment
Hard Brexit (UK Import Tariffs)	-3.0%	-9.7%	-3.6%	-1.6%	-3.8%
Hard Brexit (MFN Tariffs)	-3.3%	-11.7%	-3.7%	-1.7%	-3.7%
Indefinite backstop	-1.6%	- 5.0%	-2.3%	-1.0%	-1.9%
NI (Backstop), GB (EEA)	-1.3%	-4.0%	-1.8%	-0.7%	-1.6%
NI (Backstop), GB (FTA)	-2.7%	-8.2%	-3.6%	-1.6%	-3.4%
Soft Brexit (EEA)	-1.1%	-3.4%	-1.5%	-0.6%	-1.3%

Source: *FAI Analysis*

I. Hard Brexit

Table 4 summarises the long-term impact (after 15 years) of a hard Brexit on Northern Ireland trade on key macroeconomic indicators expressed as a percentage change from baseline values, i.e. from what they would have been in the absence of Brexit. Impacts appear smaller than other previous studies. This reflects the intention of the report to isolate the impact of Brexit scenarios on NI own trade only with the EU and GB as well as using more detailed trade data.

Table 4: Hard Brexit scenario: long term % changes relative to baseline

	% change
GDP	-3.3
Exports	-11.7
Real wage	-3.7
Employment	-1.7
Investment	-4.2

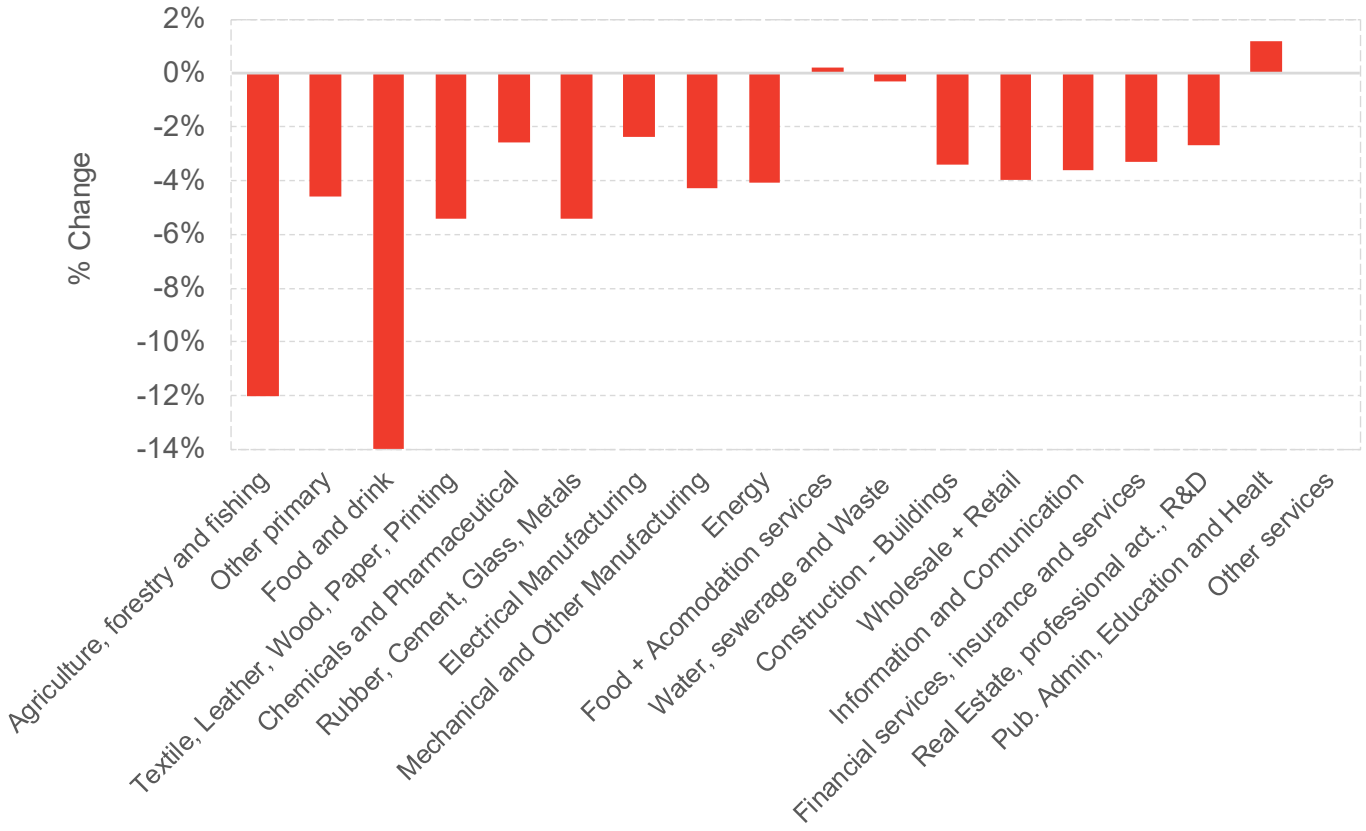
Source: *FAI Analysis*

In summary, after around 15 years:

- Northern Ireland GDP is expected to be around 3.3% lower than it would be otherwise;
- Exports are expected to be 11.8% lower on aggregate;
- Real wages are expected to be 3.7% lower , combined with employment being 1.7% lower;
- Investment is expected to be 4.2% lower than the baseline position.

Chart 1 reports the long-term impact on value added as a percentage change from baseline values for various sectors. However, it is useful to look at changes in absolute terms expressed in millions of pounds. For this reason, absolute changes for relevant sectors are reported in the text[11]. The results are driven by a complex combination of factors, including EU-export and import intensity, size of the activity, and size of tariffs and non-tariff barriers.

Chart 1: Hard Brexit. Value added: long term value change relative to baseline



Source: *FAI Analysis*

In summary:

- Sectors with a higher exposure to EU trade experience the greatest contraction from the baseline position. The negative impact comes both from the direct reduction in export demand and from the increase in cost of imported intermediate inputs used by industries in production;
- The most affected sector is food and drink - GVA is expected to be 14.0% lower than it would be in the absence of Brexit which corresponds to a reduction of approximately £225m;
- Agriculture forestry and fishing is the second most affected industry proportionately to its baseline value (-12.0%) and the fifth in absolute terms (-£85m);

11 Changes in absolute values are calculated using 2017 data provided by NISRA.

- Wholesale and retail and financial services are relatively large sectors in the Northern Ireland economy. For this reason, although the proportionate reduction in GVA is moderately smaller than that in other sectors, in absolute terms GVA is expected to be £225m and £211m lower respectively;
- Mechanical and other manufacturing industry is one of the most exposed to trade and it would be £130m lower in GVA;
- Public administration, Education and Health experiences a GVA boost of 1.2% (£111m). The underlying assumption is that a share of tariff revenues is allocated to NI and spent primarily on this sector. This spending is additional to the pre Brexit government expenditure level. Without this boost to the economy, it is expected that the overall impact of a hard Brexit on GDP would be -3.8%.

It is important to stress that a key underlying assumption in this scenario is that government expenditure in NI is fixed to pre-Brexit levels and that tariff revenues are used to increase government expenditure. Essentially, this implies that post Brexit public spending is higher than the pre Brexit level. Of course, given that Brexit is a UK wide policy, public expenditure is subject to fluctuations in tax revenues at national level. Future UK governments may of course choose to change government spending (up or down). Of course, should a slowdown follow as a result of Brexit, the UK Government may be forced to make fiscal savings in the long-run.

I (i) Hard Brexit: UK temporary tariff regime for no deal Brexit

In March 2019 the UK Government announced the introduction of a temporary tariff regime for a no-deal Brexit to minimise costs to business and consumers[12]. We use this as a scenario to the default hard Brexit by repeating the simulations as in the previous section but applying the tariffs outlined by the UK Government[13] rather than the EU's WTO MNF tariffs.

As expected, this partly mitigates the negative impact of hard Brexit by reducing the increased costs for industries and consumers. However, GDP is expected to be 3.0% lower than it would otherwise be. This is only 0.3 percentage points higher than the default hard Brexit scenario, mainly for two reasons. First, although most import tariffs have been reduced, trade is still limited by non- tariff barriers. Second, the tariff revenue allocated to Northern Ireland reduces substantially as the UK operates a more liberalised trade policy for UK imports. Consequently, GVA in the public sector increases by £29m.

I (ii) Hard Brexit: Sensitivity Analysis

As the objective of this report is to isolate the impact of Brexit on NI, potential spillover effects from the rest of the UK are not captured. As explained in the introduction, Brexit could lead to slower growth in the UK economy in the long run – see for example, UK Government (2018)[14]. This could impact NI through a number of channels including inter-regional trade, inter-regional migration, wages and regulations.

Since the focus of this report is trade, we provide a flavour of the impact of reduced NI-GB trade simulating an illustrative 5% and 10% reduction in sales to GB. These are additional to the hard

12 https://www.gov.uk/government/news/temporary-tariff-regime-for-no-deal-brexit-published
13 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/785939/Tariff_Reference_Document_13_March_2019.pdf
14 See www.gov.uk/government/publications/exiting-the-european-union-publications

Brexit trade shocks in section 5.1. Such simulation would reflect the fact that a smaller UK economy will reduce the overall demand for goods and services, including those produced in NI.

Results from simulations show that with a 5% and 10% reduction in sales to GB, NI GVA would be 4.0% and 4.6% lower respectively. The sectoral distribution of results would be similar to that in Chart 1. However, in the 10% case, food and drink GVA could be up to 17.6% lower than it would be in the absence of Brexit.

II. Backstop

The baseline simulation for the backstop is the permanent backstop where essentially NI follows EU trade rules and remains within the same customs territory as GB and the EU.

II (i) Indefinite backstop

Table 5 summarises the long-term impacts (after 15 years) of 'indefinite backstop' on key macroeconomic indicators expressed as percentage change from baseline values.

Table 5: Indefinite backstop scenario: long term % changes relative to baseline

	% change
GDP	-1.6
Exports	-5.0
Real wage	-2.3
Employment	-1.0
Investment	-1.9

Source: *FAI Analysis*

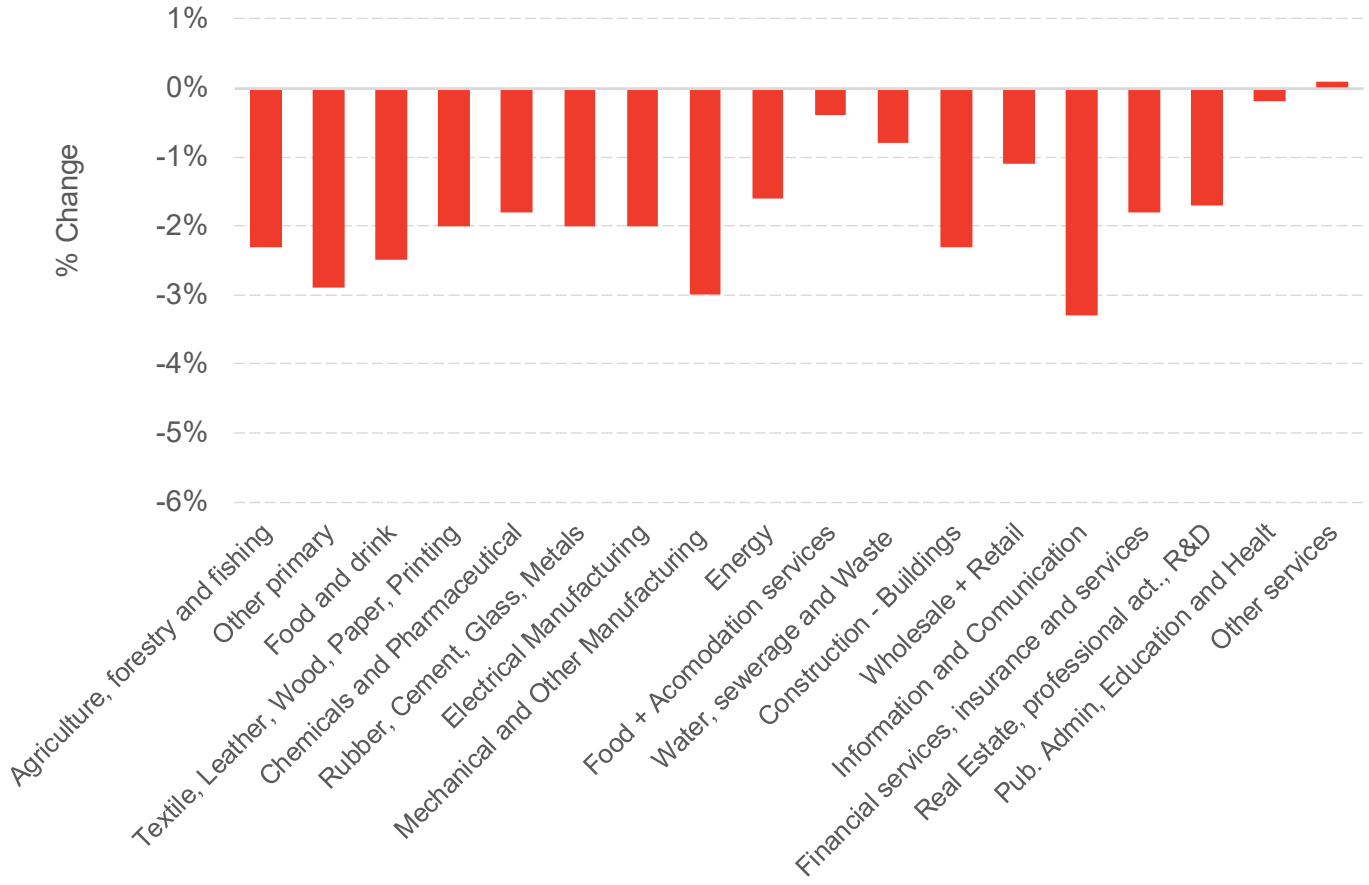
In summary:

- Northern Ireland GVA is 1.6% lower than what it would have been otherwise;
- Exports are 5.0% lower;
- Real wage is expected to be 2.3% lower while employment is 1.0% lower;
- Investment is expected to be 1.9% lower than the baseline position.

The impacts are generally smaller than in the hard Brexit scenario. In addition, the results are driven by different forces. No tariffs are imposed in this scenario and goods are free to circulate between NI and the EU. However, there are some frictions between NI and the rest of the UK, and restrictions are applied to services trade with the EU.

These differences are reflected in the long-term impact on value added reported in Chart 2.

Chart 2: Indefinite Backstop. Value added: long term value change relative to baseline



Source: *FAI Analysis*

In summary:

- The impacts are greater on those sectors who trade services or have the greatest exposure to trade with GB;
- The most affected sector in proportionate terms is information and communication services (-3.3%);
- The most affected sector in absolute terms is financial services, where value added is expected to be £117m lower;
- This is followed by mechanical and other manufacturing sectors (-£90m), constructions and wholesale and retail (-£65m and -£63m);
- Value added on other services increases by £2m. This is because it is a small industry with very little exposure to trade and it benefits from the reduced labour cost as there is less demand for labour associated with the lower level of economic output.

II (i) NI backstop, GB EEA (BEEA) and NI Backstop GB FTA (BFTA)

The impact of these two scenarios are reported in Table 6.

Table 6: Backstop/EEA, Backstop/FTA scenarios: long term % changes relative to baseline

	BEEA % change	BFTA % change
GDP	-1.3	-2.7
Exports	-4.0	-8.2
Real wage	-1.8	-3.6
Employment	-0.7	-1.6
Investment	-1.6	-3.4

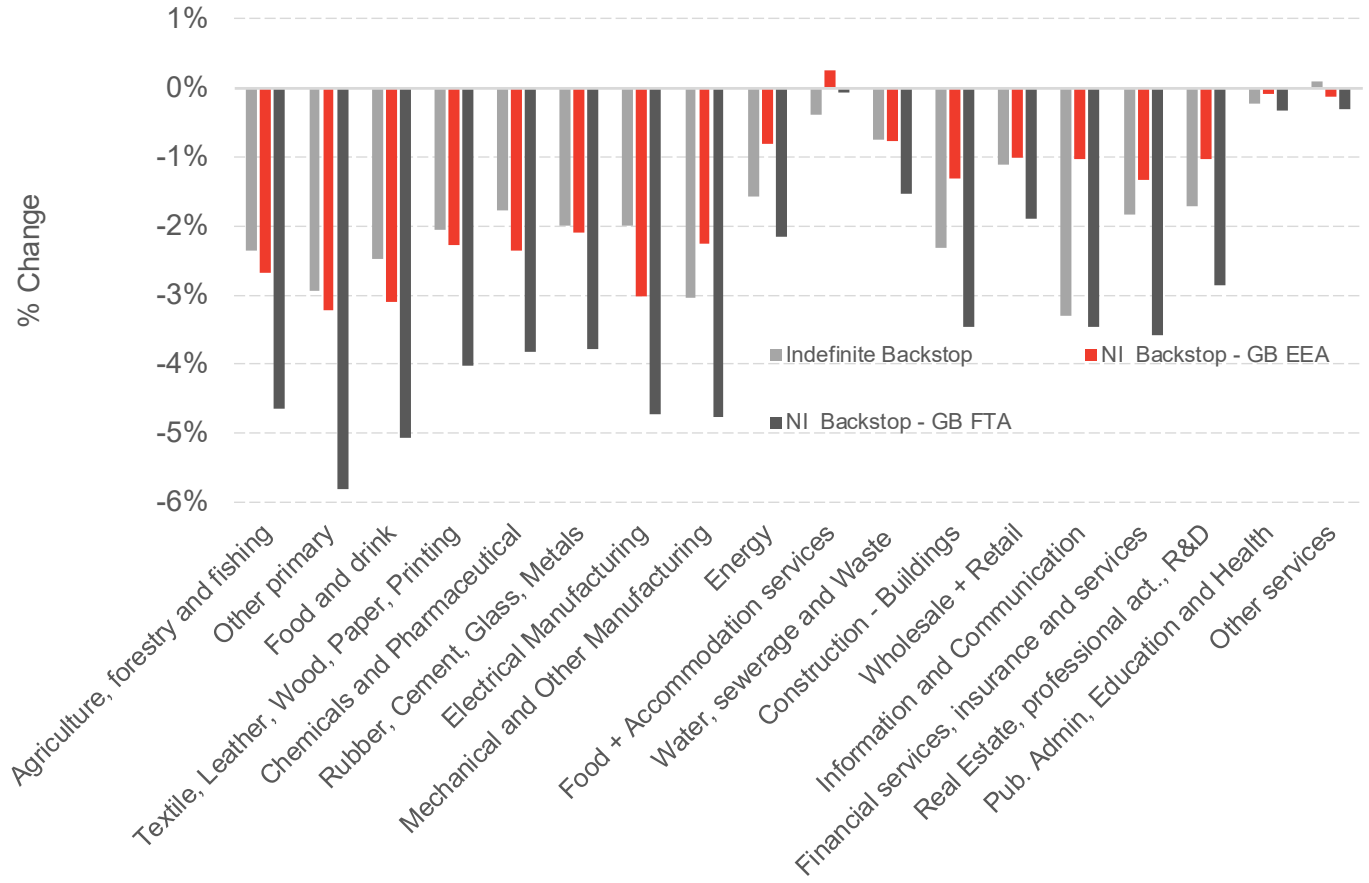
Source: *FAI Analysis*

In summary:

- Impacts are positively related to the level of integration between the GB and EU markets;
- Export are expected to fall more in the FTA case due to higher restrictions in trade services and the higher costs of GB imports;
- The reduction in GB to NI trade is higher in the FTA case and this exacerbates the impacts on the macroeconomy.

Chart 3 illustrates value changes in GVA in the case of indefinite backstop, backstop/EEA and backstop FTA.

Chart 3: Comparing backstop scenarios. Value added: long term percentage change relative to baseline



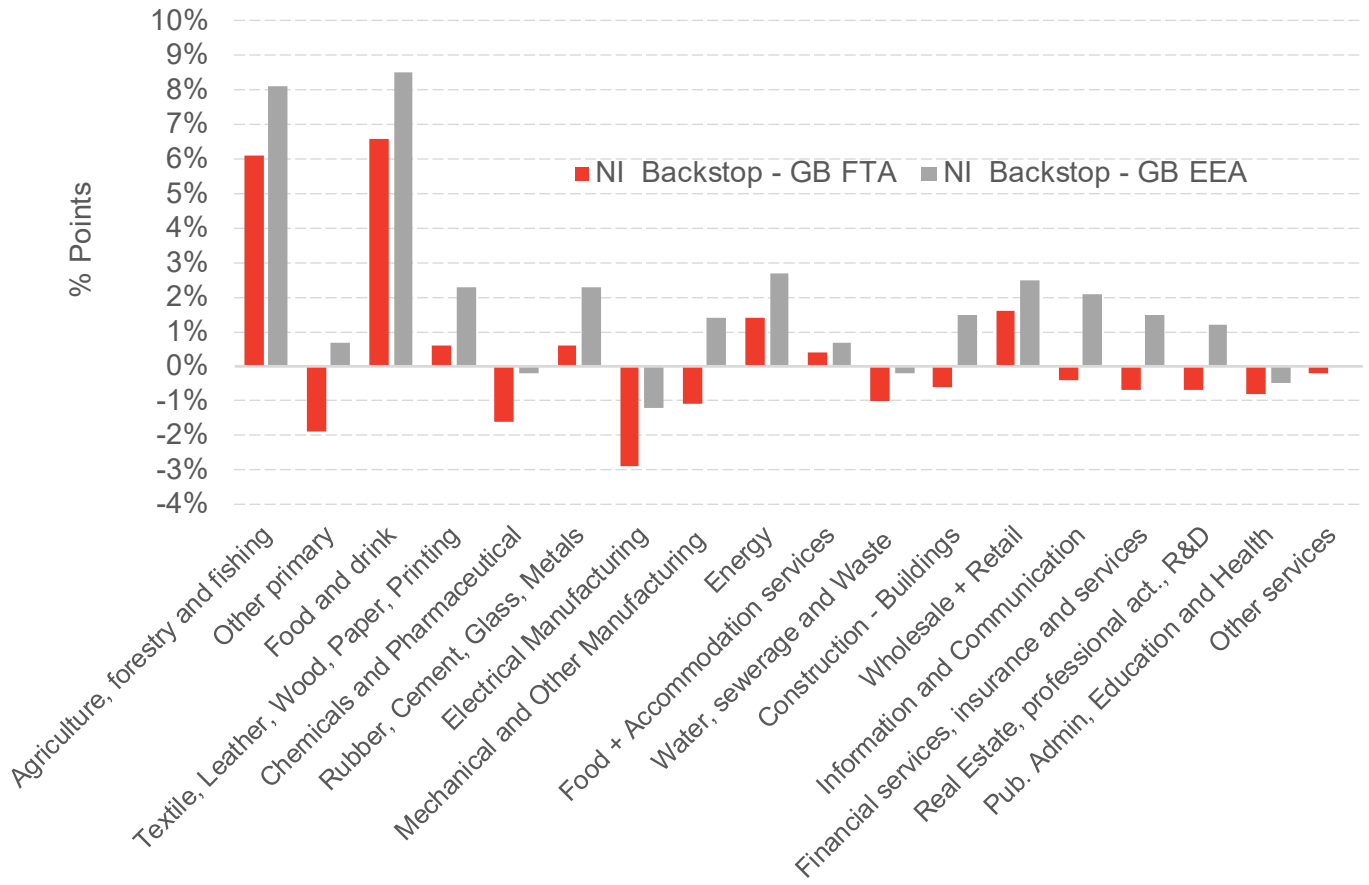
Source: *FAI Analysis*

In summary:

- Backstop/EEA has a smaller negative impact on services industries, especially on financial services;
- Impacts of backstop/FTA are typically greater than under the other scenarios;
- In proportionate terms, agriculture and food and drink sectors are the most impacted sectors.
- The most impacted sectors in absolute terms are financial services (-£229m), mechanical manufacturing and other manufacturing (-£141m) and wholesale and retail (-£108m).
- Under backstop/FTA financial services experience the greatest contraction in absolute GVA terms (£229m).

As Chart 3 illustrates most sectors are negatively affected under each potential backstop scenario. However Chart 4 below demonstrates that some sectors are worse off under the backstop than compared to a hard Brexit. The bars in Chart 4 represent the difference in percentage points between the percentage change in value added under Backstop –GB FTA, and Backstop –GB EEA and Hard Brexit with reduced UK import tariffs.

Chart 4: Comparing sectoral impacts under the backstop compared to a Hard Brexit with UK import tariffs.



Source: *FAI Analysis*

Although both the agriculture and food and drink sectors will be significantly better off under the main backstop scenarios compared to a hard Brexit, this is not the case for all sectors with e.g. electrical manufacturing being up to 3% worse off under the backstop. This is due in part to the fact that a significant proportion of intermediate inputs for this sector are sourced from GB and will be adversely affected if trade frictions arise from either e.g. customs declarations or single market checks.

III. Soft Brexit

In this scenario both NI and GB are part of the European Economic Area. Impacts on key macroeconomic variables are summarised in Table 7.

Table 7: EEA scenario: long term % changes relative to baseline

	% change
GDP	-1.1
Exports	-3.4
Real wage	-1.5
Employment	-0.6
Investment	-1.3

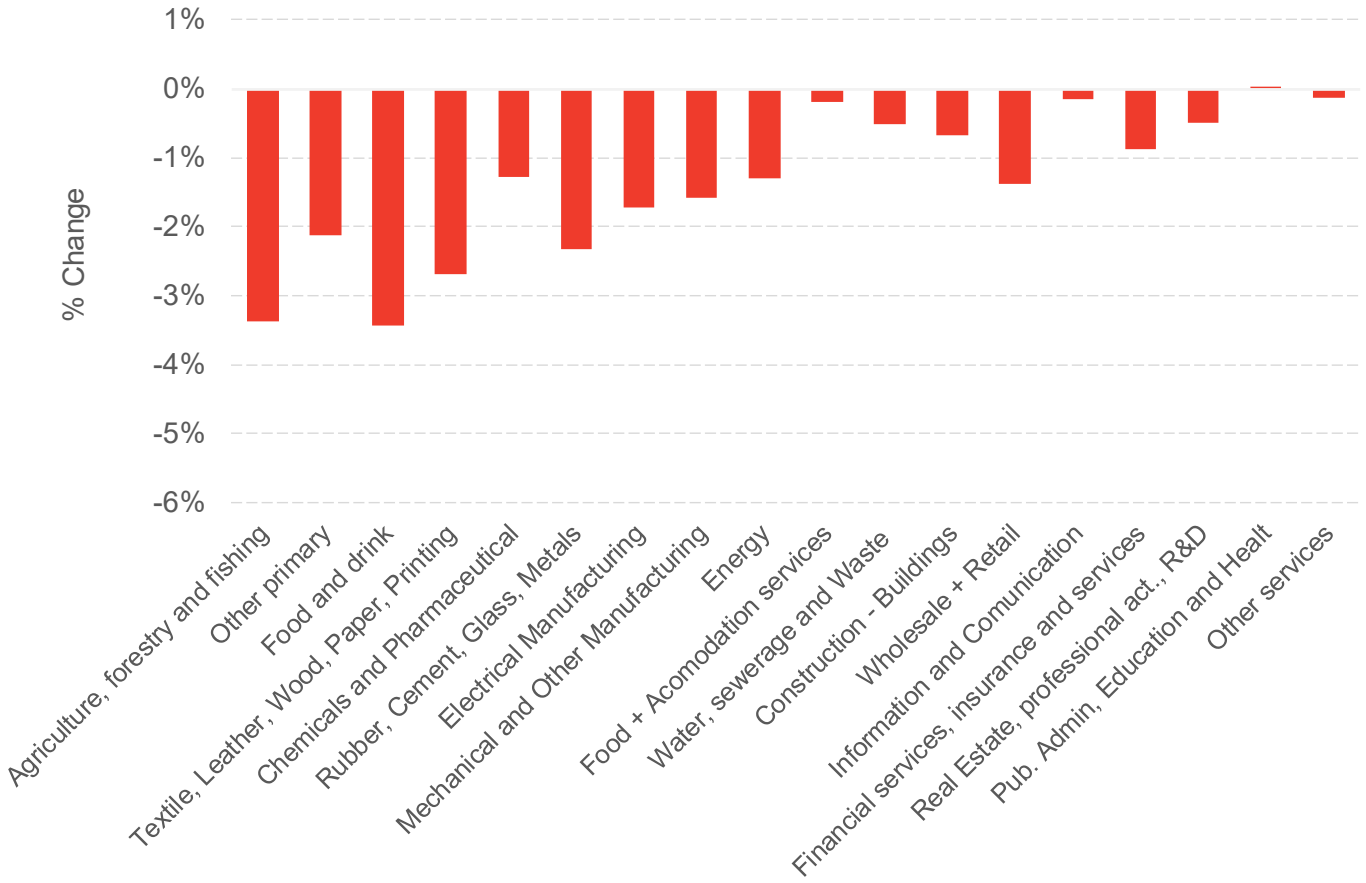
Source: *FAI Analysis*

In summary:

- Impact on GDP is approximately ⅓ of the reduction under the WTO scenario;
- Impacts on exports, wages employment and investment are still negative but smaller than any other scenario.

The sectoral distribution of impact is represented in Chart 5.

Chart 5: Soft Brexit. Value added: long term value change relative to baseline (2013)



Source: *FAI Analysis*

In summary:

- Sectoral impacts are generally smaller than in the other scenarios;
- In proportionate terms, agriculture and food and drinks are the most affected sectors (-3.4%), with food and drink being also the second most affected in absolute terms (-£55m);
- The most affected industry in absolute terms is wholesale and retail, with GVA being -£77m lower compared to the baseline;
- Financial services is the third most affected in absolute terms industries (-£57m), followed by mechanical and other manufacturing (-47m).

Conclusions

Section 6

In this report we explore the possible impact of Brexit on the NI economy. While a number of studies have analysed the impact of Brexit for the UK as a whole, or apportioned UK results to Northern Ireland, this is the first attempt to isolate the impact of potential Brexit scenario on NI's own trade with the EU and GB.

We employ a computable general equilibrium (CGE) model of NI developed by the Fraser of Allander Institute. Since an agreement between the EU and the UK has not been signed, we explore a range of scenarios, representing different degrees of integration between NI and EU markets and between NI and GB markets.

Whilst the scenarios we have modelled are illustrative, they provide a useful indication of both the scale of any Brexit impacts, and crucially the channels through which any effects will be transferred.

We find that Brexit has negative impacts on the NI economy in all the scenarios. However, the scale of the impacts is relatively smaller when compared to previous UK studies (HMT 2016, HMG 2018). This is because the use of a single region model has meant we are limited to modelling the direct impact of Brexit on NI's trade and indirect impacts/spillovers (for example the impact on NI sales to GB as a result of Brexit impacting the rest of the UK have not been captured). In addition, it reflects specific characteristics of the Northern Ireland economy such as its exposure to trade with the EU and its relatively large public sector. The magnitude of the impact varies depending on the specific post Brexit trading agreement and on the impact of these on trade intensive sectors.

In the hard Brexit scenario, both EU MFN tariffs and non-tariff barriers are applied to trade with the EU. This would deliver a potential 3.3% reduction in GDP after 15 years compared to the baseline position. The most affected sectors are food and drink, manufacturing and agriculture.

The negative impact of hard Brexit could be partly mitigated if tariffs are reduced as announced by the UK Government. In this case, GDP would be 3.0% lower that it would otherwise be.

However, if Brexit causes a general slowdown of the UK economy (as predicted by most studies at the UK level), and this causes a reduction in GB consumption of NI produced goods, the fall in GDP could be significantly higher. For instance, if under hard Brexit NI sales to GB falls by 5% or 10%, GDP would fall by 4.0% and 4.6% respectively.

In the case of a backstop, a crucial point is the presence of non-tariff barriers between NI and GB and the openness to trade services (services trade are not covered by the provisions of the backstop). In the case where NI is in the backstop but GB and NI share a common trade area and frictions arise only by the existence of different regulations, GDP is expected to be 1.6% lower than the baseline. When GB is part of EEA or of a FTA, GDP is expected to be 1.3% and 2.7% lower respectively. This is because whilst NI would be free to trade goods with the EU, it would see a substantial reduction in trade with GB, which is the region's main trade partner. The distribution of the impacts across sectors is quite different from the hard Brexit Scenario, in that in the backstop case most of the negative impact would come from reduced trade of most manufactured goods and services, but less from food and drinks.

In the case of a soft Brexit, GDP is expected to be 1.1% lower than the baseline value. Sector specific impacts are on average smaller than in the other scenarios and food and drink, manufacturing and wholesale and retail are again the most impacted sectors.

Because our model is a single region model, this analysis only captures the impact of Brexit on NI in isolation. However, Brexit will affect the UK as a whole and negative impact on the rest of the UK are likely to exacerbate the impact on the region as pointed out in Roy et al. (2016) and Figus et al. (2017) in their analysis for Scotland.

A natural extension to this study is to use a NI-GB interregional model to look at the impact of Brexit on the UK as a whole and capture feedback effects between the two regions. This would also offer a more accurate framework to look at potential asymmetries between post-Brexit arrangements in NI and in the rest of the UK.

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